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| 10/692,761      | 10/24/2003  | Huawen Li            | ANMS-129US          | 8965             |

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EXAMINER

VJAYAKUMAR, KALLAMBELLA M

ART UNIT PAPER NUMBER

1751

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/692,761

Applicant(s)

LI ET AL.

Examiner

Kallambella Vijayakumar

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1751

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### DETAILED ACTION

- Claims 1-20 are currently pending with the application.
- The examiner has considered the IDS filed 11/10/2003 and 02/27/2004.

### *Claim Objections*

Claim 18 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The claim recites the range of 0% for the copolymer or terpolymer that is broader than essential presence of the polymer or copolymer in claims 13 and 17.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 13-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Chan et al (US 6,042,751).

Chan et al teach a thick film conductor composition containing: (i). 0.1-5 wt% PGM/graphite catalyst, (ii). 62-85 wt% graphite, (iii). 14-35 wt% thermoplastic polymer and (iv). 0.01-3 wt% surfactant (Col-2, Ln 38-47). The thermoplastic polymers included acrylic resins such as styrene containing acrylic copolymer, poly(acrylonitrile-butadiene-styrene)<ABS>, poly(styrene acrylonitrile) <SAN>, and benzyl methacrylate acrylic copolymer with enhanced wetting properties (Col-5, Ln 13-31). The hydrophilicity of these acrylic polymers is anticipated over the disclosure of Buter (US: 4,871,797; Col-4, Ln 2-9). The conductor composition contained Pt/Graphite as the electro-catalyst (Col-3, Ln 39-40, 60-61) and the filler included

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natural, synthetic or pyrolytic graphite (Col-4, Ln 32-33). With regard to claim 17, the prior art teaches Benzyl methacrylate acrylic copolymer. With regard to a product by process composition in claim-18, the examiner asserts that the art copolymers/terpolymers are made by copolymerizing monomers such as styrene, acrylic and methacrylic acids that are identical to those in the applicant's copolymers, and the reaction process would result in identical wt% ratios of the product. All the limitations of the instant claims are met.

The reference is anticipatory.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (US 6,627,058).

Chan teaches a thick film conductor composition containing (i). 0.1- 5wt% Pt/graphite catalyst (Abstract, Col-4, Ln 60-65), (ii). A poly(glycol ether) such as acrylic polymers derived from PGE (Col-6, Ln 34-38), (iii). An electrically conductive filler such as graphite or its blend with carbon black, and (iv). A mixture of thermoplastics such as polyacrylic, styrene containing acrylic copolymer, poly(acrylonitrile-butadiene-styrene)<ABS>, poly(styrene acrylonitrile) <SAN>, and benzyl methacrylate acrylic copolymer

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with enhanced wetting properties (Col-6, Ln 46 – Col-7, Ln 10). The prior art teaches the composition containing a mixture of thermoplastics (d) from a limited no of polymers, and a mixture obviously will contain at least two polymers that will meet the limitation of First and Second polymers in claims 1-4 and 7-9, and acrylic polymer in claim-13.

The prior art is silent about the Tg values per claim-1 and hydrophilicity of the acrylic polymer per claim 13.

The presence of different Tg values for these intrinsically different polymers in the mixture per claim-1 would be obvious over their differing nature and molecular weights of the constituent copolymers. The hydrophilicity of the acrylic polymers would be obvious over Butler that discloses hydrophilic nature for the copolymer of styrene and/or methyl styrene, acrylic acid and/or methacrylic acid and optionally a different ethylenically unsaturated monomer (US: 4,871,797; Col-4, Ln 2-9).

With regard to claims 5-6 and 15-16, the prior art teaches Pt/graphite.

With regard to claims 10, 14 and 17, the prior art teaches Benzyl methacrylate acrylic copolymer.

With regard to a product by process composition in claim-18, the examiner asserts that the art copolymers/terpolymers are made by polymerizing monomers such as styrene, acrylic and methacrylic acids that are similar to those in the applicant's copolymers and the reaction process would result in similar wt% ratios of the product.

With regard to claims 11 and 19, the prior art teaches synthetic, pyrolytic or natural graphite (Col-5, Ln 25-26).

With regard to claims 12 and 20, the prior art teaches a printed sensor (Col-8, Ln 47-50).

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8-5.30 Mon-Thu, 8-4.30 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on 571-272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV  
March 15, 2006.

*Douglas McGinty  
Supervisory Patent Examiner  
Art Unit 1751*